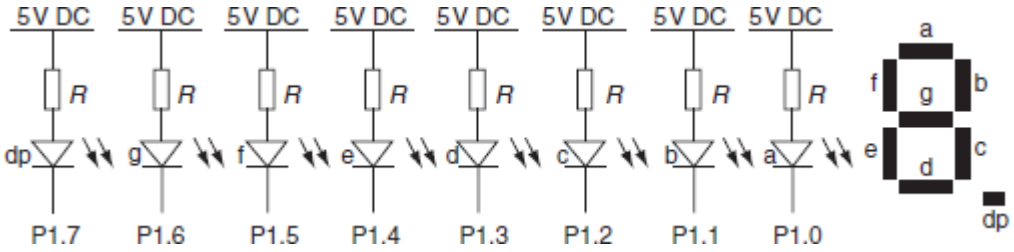
EXPERIMENT 6: Seven Segment Displays

The seven-segment display has eight LEDs in it. Each LED illuminates a segment. The seven-segment display is shown to the right with its standard segment identification letters. A seven-segment display (decimal point dp included) is a device where each LED is driven by the sink method. Numbers and letters are written on the screen according to the on/off positions and combinations of the LEDs here.

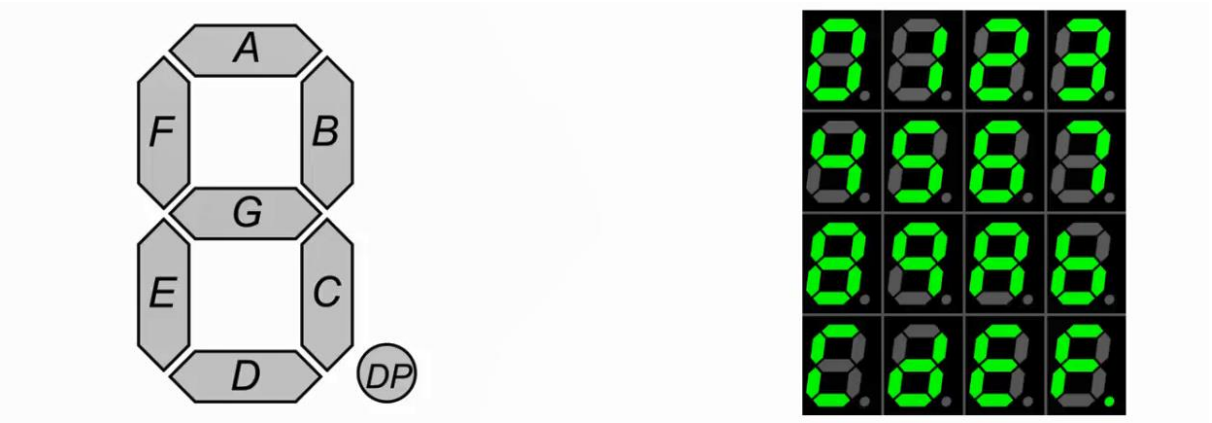


The hegacimal numbers that should be loaded to the ports in 7 segments with common anodes are simply as follows.

Decimal	Hexadecimal	Decimal	Hexadecimal
0	C0	0.	40
1	F9	1.	79
2	A4	2.	24
3	B0	3.	30
4	99	4.	19
5	92	5.	12
6	82	6.	2
7	F8	7.	78
8	80	8.	0
9	90	9.	10

For example, if we want to write 3 on the screen, we should light the a, b, g, c and d LEDs. In 7 segments with common anode, their pins must be zero in order for them to light up. Also, it is necessary to activate the dp by making the 1st pin of the p3 one. The code that writes 3 on the first screen is as below.

```
ORG 00H
        MOV P2,#00H
        MOV P3,#00H
        dongu:
        SETB P3^0; 1.EKRAN SEÇILDI (We choose the first screen)
        MOV P2, #0B0H
        sjmp dongu
        END ; sonsuz döngü içinde olmazsa sürekli yanıp söner ( to LEDs be ON continiously, the code must be in a loop)
```



Decimal	DP	G	F	E	D	C	B	A	Hex.Dec.
	P2^7	P2^6	P2^5	P2^4	P2^3	P2^2	P2^1	P2^0	
3	1	0	1	1	0	0	0	0	B0H

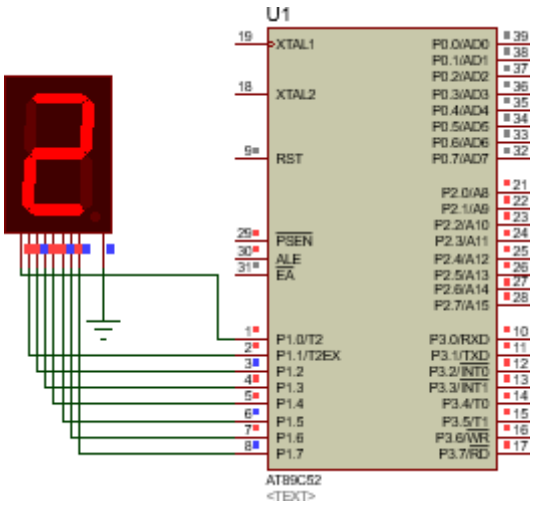
Example 1 Write two program lines, one to display 5, the second to display 2. In both cases turn the decimal point off.

Solution

	P1.7	P1.6	P1.5	P1.4	P1.3	P1.2	P1.1	P1.0	
	dp	g	f	e	d	c	b	a	
5	0	1	1	0	1	1	0	1	6DH
2	0	1	0	1	1	0	1	1	5BH

MOV P1, #6DH

MOV P1, #5BH



Sample Code to write 356.9 on the 7-segment display.

```
ORG 00H
        MOV P2,#00H
        MOV P3,#00H
        dongu:
                CLR P3^3
                SETB P3^0; 1.EKRAN SEÇILDI
                MOV P2, #0B0H
            ACALL GECIKME
                CLR P3^0
                SETB P3^1
                MOV P2, #92H
            ACALL GECIKME
                CLR P3^1
                SETB P3^2
                MOV P2, #2H
            ACALL GECIKME
                CLR P3^2
                SETB P3^3
                MOV P2, #98H
            ACALL GECIKME
        sjmp dongu
            GECIKME: MOV R0,#255D
            DJNZ R0, $
            RET
        END
```

